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1 STABILIZER FOR OBJECTS SUCH AS

2 CABLES AND WIRES

3 Specification

4 Field of the Invention

5 A stabilizer to hold cables and wires in position.

6 Background of the Invention

7 Electrical and electronic equipment include cables and
8 bundles of wire which must be stabilized in the structure. It is
9 common practice for many of these to be held by twisted ties.
10 These ties are slow to create, and involve repetitive motions of
11 the hand and wrist which are at best uncomfortable, and at worst
12 are potentially harmful to the installer.

13 These are actually time-limiting factors in the production
14 of many kinds of electronic apparatus. It is not uncommon for
15 some stabilizer arrangements of this type to require time on the
16 order of several minutes or more for each individual
17 stabilization. Due to access limitations, simply adding more
18 people is only a partial remedy. Instead it simply takes more
19 time on the production line. The cost of this delaying lag time
20 in the production line and the discomfort and disabilities
21 involved have long called for improvement, and yet at this time,
22 the existing practices are continuing for want of a better way.

23 This invention provides a device which can, in only a few
24 seconds, engage and stabilize a pair of wires or cables that

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1 otherwise can take minutes, and this with no threat to the
2 installer.

3 It is a object of this invention to provide a stabilizer
4 able to grasp and hold a plurality of wires, cables or anchors.
5 It enables an installer to do this merely by pulling on one end
6 of the device so as to trap both items, and then restore itself
7 to its memory position.

8 Brief Description of the Invention

9 A stabilizer according to this invention includes a pair of
10 hook-like retainers joined by a stiffly springy joinder. A pull
11 bar is joined to one of the retainers. When the pull bar is
12 pulled, the remote hook can readily be placed over whatever it is
13 to engage. Then with an additional pull that further elongates
14 the joinder, the pull bar can be manipulated to place the other
15 retainer on to the other item to be engaged. Releasing the pull
16 bar engages both retainers while it returns toward its relaxed
17 condition, and establishes the spacing between the gripped items.

18 According to a preferred embodiment of the invention, the
19 stabilizer is a single piece unitary and continuous structure
20 molded from a thermoplastic resin.

21 The above and other features of this invention will be fully
22 understood from the following detailed description and the
23 accompanying drawings, in which:

24 XX

1 Brief Description of the Drawings

2 Fig. 1 is a plan view of the presently-preferred embodiment
3 of the invention;

4 Fig. 2 is side view taken at line 2-2 in Fig. 1; and

5 Fig. 3 is a plan view of a device such as Figs. 1, modified
6 to accommodate a different spacing.

7 Detailed Description of the Invention

8 The presently-preferred embodiment of a stabilizer 10
9 according this invention is shown in Figs. 1 and 2. A first
10 retainer 11 is provided at a first end 12 of the device, and a
11 second retainer 13 is provided at its second end 14.

12 The retainers are conveniently made identically, although
13 each could be made a different shape or size to accommodate a
14 different installation. In every embodiment, each retainer is
15 hook-like, with an overhanging segment 15, a bight segment 16, a
16 back segment 17, and a base segment 18.

17 The overhanging segment is intended to project from the
18 bight segment sufficiently to retain an object 20. When the
19 object is circular, such as a cable or a bundle of wires, the end
20 21 of the overhanging segment will be across the center line 22
21 of the object. This arrangement can conveniently be regarded as
22 shielding more than 180 degrees of the object. This serves to
23 retain an object so it cannot slide out laterally.

24 Spacing 23 between end 21 and base segment 18, when the

1 stabilizers are relaxed, is preferably but not necessarily
2 smaller than the diameter of the object. This provides an
3 additional retention feature.

4 Second retainer 13 is formed (although not necessarily
5 identically formed) identically to first retainers 11. It bears
6 the same reference numbers. Its purpose is to engage a second
7 object 25, which may be the same kind as object 20, although it
8 may be different.

9 A pull rod 30 is joined to one of the retainers by a stub
10 31. The pull rod preferably has segments 32,33 extending on
11 opposite sides of the stub so it can be gripped and pulled by two
12 fingers to install the stabilizer.

13 A joinder 35 joins the two retainers to one another at their
14 base segments. The joinder is stiffly springy and flexible. It
15 is preferably sinuous, having a plurality of wave-like
16 undulations 36. While the retainers could be made of a different
17 material than the joinder it is best practice and also least
18 expensive to mold the entire stabilizer in a single piece.

19 For this reason the retainers will preferable have a
20 substantial cross-section so they will be stiffer. The joinder
21 will have a lesser cross-section so it can provide a springier
22 action. This relationship enables the retainers to be strongly
23 attached to the objects, but be spread apart be a pull on the
24 pull rod to facilitate their attachment, and the joinder can act

1 as a stiff spring.

2 The preferred cross-section of the stabilizer is square or
3 rectangular, for convenience in molding. It may instead be
4 circular or any other desired shape. It should be noted that the
5 object of this invention is for an installer, using only one
6 hand, to hold the stabilizer and hook the first retainer over an
7 object, readily rotating the stabilizer to align it, this without
8 regarding the use of his other hand. A substantial cross-section
9 enables this.

10 The undulations act as a stiff spring which can be elongated
11 to enable the installation, and will return toward its release
12 configuration when the pull tool is released. Generally, at
13 least two full sine-wave undulations (40 and 41 in Fig. 1) will
14 be provided for best performance. While more of them can be
15 provided, they may result in more flexibility and less resistance
16 to stretch than desired.

17 Therefore, in order to make a longer stabilizer, it is best
18 practice to insert a spacer segment 45 in stabilizer 46, shown in
19 Fig. 4. This is simply a rigid straight segment which will not
20 elongate, so the function of stabilizer 4b is essentially the
21 same as stabilizer 10 in Fig. 1. Its use is identical to that of
22 stabilizer 10. As a convenience in manufacture it will be noted
23 that the two end segments 50,51 are the two halves of stabilizer
24 10. An insert can be placed between them so that the costly

1 parts of an injector mold can be used to produce stabilizers of
2 different length.

3 Different materials of construction may be used, but the
4 best selections will be made from a wide selection of
5 thermoplastic resins and mixtures of thermoplastic resins. These
6 are selected for moldability and the stiff flexibility required
7 for the task. The presently preferred resin is Nylex, a mixture
8 of nylon and polypropylene. Other suitable resins are celcon and
9 delrin.

10 This invention is not to be limited by the embodiments shown
11 in the drawings and described in the description, which are given
12 by way of example and not of limitation, but only in accordance
13 with the scope of the appended claims.